

McCulloch Gold Mill, 1832
Copper Branch, 259 yards north of State Route 1153
Jamestown Vicinity
Guilford County
North Carolina

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PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
Heritage Conservation and Recreation Service
Department of the Interior
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HISTORIC AMERICAN ENGINEERING RECORD

McCulloch Gold Mill

NC-7

Location: On Copper Branch 259 yards north of
SR 1153, Jamestown vicinity, Guilford
County.
High Point East: 17.596660.3980060

Date of Construction: 1832

Original Owner: Charles McCulloch

Present Owner: Oakdale Cotton Mills

Significance: Only known existing ante-bellum
engine house built solely as a gold
mill in North Carolina

Current Condition: Deteriorated

Historian: James T. Brenner, 1977.

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In the 1830's, a considerable amount of experimentation went on with both gold mining and milling techniques. Mechanics and inventors, with varying degrees of success, devised, developed, and improved methods of extracting gold from ore. The reasons for their efforts were basically twofold. By the 1830's, the easily accessible ore in known gold mines had been extracted, and the remaining gold was embedded in hard quartz veins 50 or more feet underground. To free the gold required not only new mining techniques, but also, because of the greater mining costs, more efficient milling processes. The other reason for the experimentation was, simply, the advent of a relatively new power source: the stationary steam engine.

In 1832, Charles McCulloch, an entrepreneur from South Carolina, erected near Jamestown, North Carolina, on property purchased from Robert Hodson, a gold mill that incorporated both the new power source and a new milling technique. Ostensibly, the McCulloch mill served several gold mines in the immediate vicinity. [1] The gold mill processed ore from the nearby Lindsay Mine, Deep River Mine, Gardner Hill Mine, and, possibly, the later McCulloch Mine. In addition, the mill no doubt crushed the ore of individual prospectors and miners.

The mill building was built on the banks of present-day Copper Branch, a tributary of the Deep River. Built almost entirely of granite, the building, known locally as the Rock Engine House, most likely housed a walking beam steam engine. The two-story building contains not only an attached boiler room, but also a 70' chimney which was probably intended to serve as a smelter for reducing the gold ore. More likely, however, the chimney was used as either a furnace to melt the gold into ingots or, at the very least, to recover the mercury during the retorting operation.

Gold milling technology in the first half of the 19th century was based solely upon mechanical extraction processes. The gold ore underwent various crushing and washing operations before final recovery was complete. Usually, two or three operations occurred at one location.

The most common method of crushing ore was the Chilean mill. Large circular stones mounted on a horizontal axle revolved upon a 6 to 8-foot diameter stone bed. Workers shoveled the ore onto the bed, filled the wooden tub surrounding the bed with water, and allowed the stones to grind the ore to a sandlike consistency. As the stones revolved, the motion forced much of the water and suspended dirt from the tub while the heavier gold sank to the bottom.

After most of the water and dirt had been washed from the mill, workers poured mercury onto the stone bed to amalgamate the gold. The mercury attracted most of the gold and the resultant amalgam was retorted to free the gold and recover the mercury. The capacity of such mills was about 1-2 tons per day. [2]

Although no proof exists, it is quite possible that McCulloch employed other crushing devices at the mill. [3] McCulloch did, however, use one, and probably two, 14' diameter Chilean mills. Because his mills were twice the size of conventional Chilean mills, McCulloch apparently sought to crush larger amounts of ore than conventional mills.

On October 31, 1836, the Greensboro Carolina Beacon reported on the mill:

...we [the editors]...[viewed] the operations of an extensive steam gold mill built by Mr. McCulloch some few years back, and which has been quite successfully and profitably employed upon the ore of neighboring mines. The engine is of a very large class--the ore is first crushed by large circular stones, propelled around in beds [note plural, "beds"] of solid rock, and after being literally ground up, undergoes the usual washing with quicksilver [mercury]. Mr. McCulloch gives it as his opinion, that but a small percentage of the pure metal is saved, and in order, if possible, to obviate this, he intends introducing the process of smelting the ore in furnaces. [4]

The editors added that "preparations at this establishment are very extensive," and they hoped that the area mines were sufficiently rich to "repay him for the vast trouble and expense he has undergone." [5]

As the editors of the Carolina Beacon asserted, the preparations at the mill were extensive. Located on a 109-acre tract, the site, in addition to the mill building, included a rubble-masonry dam, a mill race, a rubble lower dam, ore dumps, roads, and possibly a turnaround.

The rubble dam approximately 260' upstream from the mill building was flanked on either side by an earthen dike 210' long. A 16" square sluice gate allowed water to flow into the head race. The race not only diverted the course of the stream, but also directed

water from the dam behind the mill building and into a 120' tail race. In all probability, the tail race was a settling pond. A small stone dam at the foot of the tail race insured a reservoir of water for the mill operations during a particularly dry season. The race also provided water for the boilers.

Although no evidence remains, near the mill building were wooden sluices to direct water to the Chilean mills for use during crushing operations. The water, after use in the mill, flowed into the original stream bed.

Elsewhere on the mill property are numerous ore dumps. Large chunks of uncrushed quartz, approximately 6" in diameter, litter the site. The largest dump is about 100 yards northeast of the mill building. It is not known if the ore was first broken before being placed in the Chilean mills.

No access routes are visible to either the dumps or the mill building. Because the area was lumbered in the 1940's, heavy sediment deposits and new timber growth have obliterated almost all traces of roads. Except for what appears to be a turnaround and a stone retaining wall near the turnaround and close to the mill building, no access routes are visible.

In addition to the ore dumps, five carved granite stones are located east of the lower dam. Worked in the forms of semi-circles, the stones have no apparent function. The stones, each about 4 1/2' in diameter and 16" thick, appear to be half millstones. The method of joining is unclear and no center holes have been cut in any of the stones.

If the mill property is bewildering, the mill building is no less so. The architectural style of the two-story stone building is reminiscent of Cornish engine houses. Elizier Kersey, a Cornishman, is credited with supervising the construction of the building. [6] Local tradition also states that the mill house, built upon bedrock made accessible by the dam, was erected by slave labor. [7] A 70-foot granite chimney lined with a soft, apparently heat-resistant stone, was probably the location of the retorting operation. It may have been used as a smelter. Regardless, charcoal most likely provided the heat source. Behind and attached to the mill building proper is the stone foundation of another room. Most likely the boiler room, the section was partly walled and roofed with wood. [8]

The mill building is symmetrical. Two lower doors on each side

and a third door on the front and underneath the arch provided access to the beam engine. No bolt holes for hinges are apparent, however. Higher up, apertures on each side, possibly windows but more likely openings for drive shafts, directly line up with the one visible mill base. Near the roof line were two smaller windows.

Perhaps the most striking characteristic, but certainly the most puzzling, is the large Gothic arch 9' above ground level. Local tradition states that the arch was not made in the Jamestown vicinity but came from some indefinite elsewhere. [9] The base of the arch aligns with the retaining wall 15' south of the mill, and it is possible that some sort of wooden causeway spanned the creek bed. If such was the case, the bridge was probably used during installation of the steam engine.

It is not known exactly how long the McCulloch Gold Mill operated. In 1848, Charles McCulloch sold the property to John Gluyas, a Cornish mining engineer. [10] Gluyas, in 1855, sold the property to the Central Gold and Copper Company based in Norfolk, Virginia. [11] Whether Central Gold and Copper operated the mill, or, for that matter, whether Gluyas operated the mill is not known. [12] Certainly by 1861 and the beginning of the Civil War, the gold mill was inactive.

It is quite possible, however, that the mill had been abandoned prior to the 1860's. In the early 1850's, Northern investments revitalized many of the failing mines in the area and opened new ones. The McCulloch Mine, for example, named because Charles McCulloch once owned the property, was opened in the early 1850's. The McCulloch Mine, as did many others, constructed mills on the mine property to eliminate the cost of transporting the gold for milling. In addition, by mid-century, the obsolete beam engine and the experimental and largely inefficient Chilean mills precluded the possibility of the McCulloch Mill's actively competing with other ore processors.

The McCulloch Gold Mill is a unique structure. At the very least, the mill is the only known such site still standing. In terms of technological importance, the 14' diameter Chilean mill is an example of experimentation with gold milling technology. Architecturally, the mill building reflects Cornish influences. Overall, both the steam engine, although not the first in Jamestown, and, in a sense, the gold mill itself perhaps foreshadowed the advent of industrialization in North Carolina.

NOTES

¹Carolina Beacon, 21 October 1836.

²Richard F. Knapp, "A Preliminary Report on Mining Technology and Machinery at the Reed Gold Mine and Other Gold Mines of North Carolina," (Typewritten, 1973), pp. 44-49. Hereafter cited as Knapp's "Report."

³Two other commonly used methods were arrastres and rockers. An arrastre, or drag mill, consisted of eight blocks of stone arranged perpendicular to a central column and dragged over a cobbled base. Rockers were troughs on curved bases in which workers placed ore and water. The rocking action forced much of the water and suspended dirt from the trough and the heavier gold sank to the bottom. See Knapp's "Report" for a complete description.

⁴Carolina Beacon, 21 October 1836.

⁵Ibid.

⁶Randy Catoe, "The Engine House at Copper Branch," (Typewritten, 1975), p. 1.

⁷Greensboro Daily News, 24 August 1952.

⁸In an interview with Charles L. Laman, of Gibsonville, North Carolina, conducted 11 August 1977, the 81-year-old farmer asserted that as a boy he remembers seeing an unattached 8-10' boiler in the "boiler room."

⁹Ibid.

¹⁰Guilford County, North Carolina, Register of Deeds, Bk. 30, pp. 651-652.

¹¹Guilford County, North Carolina, Register of Deeds, Bk. 36, p. 400.

¹²John Gluyas Papers, 1849-1853, Southern Historical Collection, University of North Carolina, Chapel Hill. In a letter dated 20 August 1850, Gluyas wrote, "...we have started the engine at the Hodson Mine and are doing well." It is known that Robert Hodson originally owned the property and that he worked some prospects on it, but whether the extent of Hodson's workings were such that they could be termed a mine is not known. Too, it is not known if the Hodson Mine tract and the gold mill tract were the same.

BIBLIOGRAPHY

Carolina Beacon, 21 October 1836.

Catoe, Randy. "The Engine House at Copper Branch." Jamestown, 1975. (Typewritten.)

Written by a local resident, the report is more full of speculation than fact. While not particularly valuable, the report does include most of the local legends surrounding the mill.

Chapel Hill. University of North Carolina. John Gluyas Papers.

Greensboro Daily News, 24 August 1952.

Guilford County. Register of Deeds. Real Estate Transactions.

Knapp, Richard F. "A Preliminary Report on Mining Technology and Machinery at the Reed Gold Mine and Other Gold Mines of North Carolina." Raleigh, 1973. (Typewritten.)

This report is, to date, the best available source on the history of gold mining technology.

Lamarr, Charles F. Gibsonville, North Carolina. Interview, 11 August 1977.